REMARKS

This Amendment is responsive to the December 9, 2009 Office Action. Claim 1 has been amended, claim 5 has been cancelled, and claim 7 has been added. Support for the amendment to claim 1 may be found, for example, in Figs. 3A-4 and in the specification at page 4, lines 17-28. Support for new claim 7 may be found, for example, in the specification at page 5, lines 13-14. Claims 1-4, 6, and 7 will be pending upon entry of this Amendment.

Rejection Under 35 U.S.C. § 103(a)

Claims 1-6 stand rejected under 35 U.S.C. § 103(a) for obviousness over EP 0 272 233 to Lindh in view of United States Patent No. 4,509,889 to Skogberg et al. or United States Patent No. 4,634,317 to Skogberg et al. In view of the foregoing amendment and the following remarks, reconsideration of these rejections are respectfully requested.

Amended independent claim 1 recites, *inter alia*:

> ...a rockbolt main body and a pressurized-fluid-introducing sleeve fixed by welding to the rockbolt main body at an end for introduction of a pressurized fluid, wherein the rockbolt main body is a deformed pipe having an expansive groove extending along an axial direction of the deformed pipe, and wherein the rockbolt main body is configured to hydraulically expand upon the introduction of the pressurized fluid, the pressurized-fluid-introducing sleeve comprising a projecting part with an outer diameter larger than a diameter of an aperture of a bearing plate and a pressurized-fluid-introducing hole, and a bearing-plate-holding part with an outer diameter smaller than the diameter of the aperture of the bearing plate, the projecting part and the bearing-plate-holding part defining a passageway, a portion of the expansive groove of the rockbolt main body being positioned within the passageway...

Applicants respectfully submit that the cited references fail to render amended independent claim 1 obvious. The Lindh patent discloses an extensible expansible tubular stabilizer sections (30) having male and female coupling means (34, 35). The male end (34) of the section (30) is connected to a threaded hole (33) defined by a head (32). The head (32) includes an outwardly extending flange portion (13) and a coupling nipple (28) for introducing

fluid into the expansible section (30) via a passageway extending through the head (32) and the male end (34) (see Figs. 4 and 5; page 2, line 47 to page 3, line 8). The Skogberg patents disclose that the expandable tube (11) may be secured to the sleeve (19) by being welded (see column 3, lines 3-5 and column 3, lines 5-6, respectively). The Office Action at page 3 states:

> It would have been considered obvious to one of ordinary skill in the art to modify EP document [the Lindh patent] by further fixing the sleeve to the rockbolt via welding as taught by either Skogberg et al. '899 or '317 since such a modification would prevent the unwanted decoupling of the main body sections.

The passageway in the head (32) of the Lindh does not receive the expansive groove or the expansive portion of the tubular stabilizer sections (30) as recited in amended independent claim 1. The head (32) shown in Fig. 4 of Lindh is provided to cooperate with extendable sections of stabilizers (30, 31) (see page 2, line 47 to page 3, line 8 of the Lindh patent). Modifying the head (32) of Lindh such that the stabilizers are welded to the head (32) and such that the head (32) receives the expansive portion of the stabilizer destroys the intended purpose of the head (32) to receive the threaded male portion (34) of the stabilizer section (30). In other words, without the need for the threaded hole (33) in the head (32) to receive the threaded male portion (34), the bottom of the tube (11, 30) would be welded to the flange (13) as disclosed in the embodiment shown in Fig. 1 of the Lindh patent.

Furthermore, Applicants respectfully submit that cited references fail to discuss or address the problems of conventional rockbolts having welded connections between the sleeve and rockbolt body as discussed in the present specification. More specifically, the device according to one embodiment of the present invention maintains a firm bonding of a pressurized-fluid-introducing sleeve (10) and rockbolt main body (1) at a welded portion with a height of the sleeve projecting from a sprayed concrete layer being decreased such that a lining concrete layer is prevented from thickness deviation and cracking. Because the pressurized-fluid-introducing sleeve is attached and welded to an end of a deformed steel pipe of an expansive rockbolt, mere shortening of the sleeve accelerates deformation of the pipe at positions near the welded joint during hydraulic expansion of the deformed steel pipe, resulting in the breakdown of the joint of the sleeve and the deformed steel pipe due to an excess of hydraulic pressure. In order to

suppress deformation of a pipe at a position near the joint (b) during hydraulic expansion, the sleeve should have a certain length, which depends on material and weld strength of a deformed steel pipe. Merely shortening the sleeve for suppression of a projecting height is not practical in that the proper strength is not ensured. Thus, the steel pipe rockbolt according to one embodiment of the present invention has a pressurized-fluid-introducing sleeve with a large-diameter part and a small-diameter part having a unitary construction and formed in series. The small-diameter part is inserted into a bearing plate and placed in a rockbolt-setting hole of a bedrock or ground. Only the large-diameter part projects outwards from a splayed concrete layer, so as to suppress a projection height (see page 4, line 17 to page 5, line 7 of the specification). The cited references do not address the above problem and Applicants respectfully submit that there is no motivation to modify the head (32) of Lindh in view of the tube (11) and sleeve (19) of the Skogberg patents to achieve the claimed invention.

Therefore, for at least the foregoing reasons, the cited references fail to render independent claim 1 obvious. Reconsideration and withdrawal of this rejection are respectfully requested.

Claims 2-4, 6, and 7 depend from and add further limitations to independent claim 1. Thus, claims 2-4, 6, and 7 are deemed to be in condition for allowance for all of the reasons set forth above in connection with independent claim 1.

CONCLUSION

In view of the foregoing amendments and comments, Applicants respectfully request reconsideration of the rejections and allowance of pending claims 1-4, 6, and 7.

Respectfully submitted,

THE WEBB LAW FIRM

By 

Adam J. Komorowski
Registration No. 62,575
Attorney for Applicants
436 Seventh Avenue
700 Koppers Building
Pittsburgh, PA 15219
Telephone: (412) 471-8815
Facsimile: (412) 471-4094
E-mail: webblaw@webblaw.com